

RT "Cloning and expression of murine lymphotoxin cDNA.";
 RL J. Immunol. 138:4496-4501(1987)
 RP SEQUENCE FROM N.A.
 RX MEDLINE=87252204; PubMed=2885372;
 RA Gardner S.M., Mock B.A., Hilgers J., Huppi K.E., Roeder W.D.;
 RT "Mouse lymphotoxin and tumor necrosis factor: structural analysis of
 the cloned genes, physical linkage, and chromosomal position.";
 RL J. Immunol. 139:476-483(1987).
 RP SEQUENCE FROM N.A.
 RA Rowen L., Qin S., Madan A., Abbasi N., James R., Dickhoff R.,
 RA Shaffer T., Ratcliffe A., Loretz C., Lasky S., Hood L.;
 RT "Sequence of the mouse major histocompatibility class III region.";
 RL Submitted (OCT-1999) to the EMBL/GenBank/DBJ databases.
 RP SEQUENCE OF 6-202 FROM N.A.
 RX MEDLINE=89144562; PubMed=3147435;
 RA Weir D., Dautry F.;
 RT "Induction of tumor necrosis factor-alpha and -beta and
 interferon-gamma mRNA by interleukin 2 in murine lymphocytic cell
 lines.";
 RL Oncogene Res. 3:409-414(1988).
 RP SEQUENCE OF 56-76 FROM N.A.
 RX MEDLINE=91042516; PubMed=1700275;
 RA Weir D., Brosset S., Dautry F.;
 RT "RNA processing is a limiting step for murine tumor necrosis factor
 beta expression in response to interleukin-2.";
 RL Mol. Cell. Biol. 10:5865-5875(1990).
 CC -!- FUNCTION: Cytokine that in its homotrimeric form binds to
 heterotrimeric form with LTB binds to TNFRSF3/LTBR. Lymphotoxin is
 produced by lymphocytes and cytotoxic for a wide range of tumor
 cells in vitro and in vivo.
 CC -!- SUBUNIT: Homotrimer, and heterotrimer of either two LTB and one
 LTB subunits or (less prevalent) two LTA and one LTB subunits (By
 similarity)
 CC -!- SUBCELLULAR LOCATION: Secreted (homotrimer) and membrane-
 associated (heterotrimer) (By similarity).
 CC -!- SIMILARITY: Belongs to the tumor necrosis factor family.
 CC This SWISS-PROT entry is copyright. It is produced through a collaboration
 between the Swiss Institute of Bioinformatics and the EMBL outstation -
 the European Bioinformatics Institute. There are no restrictions on its
 use by non-profit institutions as long as its content is in no way
 modified and this statement is not removed. Usage by and for commercial
 entities requires a license agreement (See <http://www.isb-sib.ch/announce/>
 or send an email to license@isb-sib.ch).
 CC EMBL; U06950; AAA18593.1; -
 CC EMBL; Y00467; CAA68529.1; -
 CC EMBL; X06217; CAA29566.1; -
 CC EMBL; X06218; CAA29567.1; -
 CC EMBL; Y00137; CAA68330.1; -
 CC EMBL; M16819; AAA40460.1; -
 CC EMBL; M17015; AAA39450.1; -
 CC EMBL; AF109719; AAC82485.1; -
 CC EMBL; X14800; CAA32906.1; -
 CC EMBL; M60586; AAA40461.1; -
 CC F01; B27303; B27303.
 CC HSP; P01374; 1TNR.
 CC MGD; MGI:104797; Lta.
 CC GO; GO:0006959; P:humoral immune response; IMP.
 CC GO; GO:0007515; P:lymph gland development; IMP.
 CC InterPro; IPR006053; TNF abc.
 CC InterPro; IPR006052; TNF family.
 CC InterPro; IPR008983; TNF-like.
 CC InterPro; IPR003636; TNF_subf.
 CC Pfam; PF00229; TNF; 1.
 CC PRINTS; PR01234; TNFCROSI8FCT.
 CC ProDom; PD002012; TNF_subf; 1.
 CC SMART; SM00207; TNF; 1.

DR PROSITE; PS00251; TNF 1; 1.
 DR PROSITE; PS00049; TNF 2; 1.
 KW Cytokine; Glycoprotein; Signal.
 FT SIGNAL 1 33
 FT CHAIN 34 202 LYMPHOTOXIN-ALPHA.
 FT CARBOHYD 93 93 N-LINKED (GLNAC. . .) (POTENTIAL).
 FT CONFLICT 26 26 A -> P (IN REF. 5).
 FT CONFLICT 161 162 VR -> CG (IN REF. 2).
 SQ SEQUENCE 202 AA; 21998 MW; P496F83C685950D3 CRC64;
 Query Match 13.4%; Score 204; DB 1; Length 202;
 Best Local Similarity 32.5%; Pred. No. 1.5e-07;
 Matches 51; Conservative 25; Mismatches 73; Indels 8; Gaps 2;
 QY 133 HSPPEKKE--LRKVAHLTKNSRSMPLWEDTGVILLSGVKYKKGGLVINEGLYF 190
 DB 46 HPLPQKHLTHGILKPAHLVGVPSKQNSLLWRASTDEAFLEHGFSLNNELLIPISGLYF 105
 QY 191 VYSKVYFTRQSCN-----NLPLSHKVMYRNSKYPQDLVNMKGKMSYCTTGOMWARSY 244
 DB 106 VYSQVVFSGESCPRAIPTPIYLAHEVOLFPSSQYPPFHVPLLSAQSVPGLQGPWYRSY 165
 QY 245 LGAVFNLTSADHLVNVSELSLVNFEESQTFPGLYKL 281
 DB 166 QGAVFLSKGDQLSTHTDGLSHLHFPSPSVFFGAPAL 202

A:Title: Dense Alu clustering and a potential new member of the NFKappaB family within a
A:Reference number: S36154; MUID:93272029; PMID:8499947
A:Accession: S36154
A>Status: nucleic acid sequence not shown; translation not shown
A:Molecule type: DNA
A:Residues: 1-12, 'R', 14-205 <IRI>
A:Cross-references: EMBL:215026; NID:G37211; PIDN:CAA78746.1; PID:G37213
A>Note: The nucleotide sequence was submitted to the EMBL Data Library, August 1992
R:Abraham, L.J.; Du, D.C.; Zahedi, K.; Dawkins, R.L.; Whitehead, A.S.
Immunogenetics 33, 50-53, 1991
A:Title: Haplotypic polymorphisms of the TNF gene.
A:Reference number: I54482; MUID:91139175; PMID:1671667
A:Accession: I54482
A>Status: translation not shown; translated from GB/EMBL/DBJ
A:Molecule type: DNA
A:Residues: 1-124, 'P', 126-205 <RES>
A:Cross-references: GB:M55913; NID:G339742; PIDN:AAB59455.1; PID:G339743
A:Experimental source: ancestral haplotype 57.1
A:Note: P-9-Aen was also found (ancestral haplotype 8.1)
R:Gray, F.W.; Aggarwal, B.B.; Benton, C.V.; Bringman, T.S.; Henzel, W.J.; Jarrett, J.A.;
Nature 312, 721-724, 1984
A:Title: Cloning and expression of cDNA for human lymphotoxin, a lymphokine with tumour
A:Reference number: A93350; MUID:85086243; PMID:6334807
A:Accession: A93350
A:Molecule type: mRNA
A:Residues: 1-205 <GRA>
A:Cross-references: GB:X01393; NID:G34444; PIDN:CAA25649.1; PID:G34445
A:Experimental source: lymphoblastoid cell line RPMI-1788
R:Goeddel, D.V.; Aggarwal, B.B.; Gray, P.W.; Leung, G.E.; Palladino, M.A.;
Cold Spring Harb. Symp. Quant. Biol. 51, 597-609, 1986
A:Title: Tumor necrosis factors: Gene structure and biological activities.
A:Reference number: A32877; MUID:87217059; PMID:3472740
A:Accession: B32877
A>Status: Preliminary; not compared with conceptual translation
A:Molecule type: mRNA
A:Residues: 35-205 <GOE>
R:Kobayashi, Y.; Miyamoto, D.; Asada, M.; Ohinata, M.; Osawa, T.
J. Biochem. 100, 727-733, 1986
A:Title: Cloning and expression of human lymphotoxin mRNA derived from a human T cell by
A:Reference number: A91906; MUID:87057135; PMID:3536996
A:Accession: A91906
A:Molecule type: mRNA
A:Residues: 1-59, 'N', 61-205 <KOB>
A:Cross-references: GB:D00102; NID:G219913; PIDN:BA000064.1; PID:G219914
A:Note: The authors translated the codon TAR for residue 156 as Thr and ACC for residue
R:Fukuda, S.; Ando, S.; Sanou, O.; Tanai, M.; Masaki, N.; Nakamura, K.I.; Ar
Lymphokine Res. 7, 175-185, 1988
A:Title: Simultaneous production of natural human tumor necrosis factor-alpha, -beta and
A:Reference number: A61478; MUID:88301617; PMID:2841543
A:Accession: A61478
A:Molecule type: protein
A:Residues: 56-79; 86-95, 'X', 97, 'X', 99, 119-151, 'XX', 154-162, 'X', 164, 'X', 166, 'X', 169, 'X', 1
R:Voigt, C.G.; Maurer-Poggy, I.; Adoll, G.R.
FEBS Lett. 314, 85-88, 1992
A:Title: Natural human tumor necrosis factor beta (lymphotoxin). Variable O-glycosylation
A:Reference number: S26951; MUID:93083656; PMID:1451807
A:Accession: S26951
A:Molecule type: Protein
A:Residues: 35-59, 'N', 61-205 <VOI>
A:Note: 60-Thr was also found
R:Fukushima, K.; Watanabe, H.; Takeo, K.; Nomura, M.; Asahi, T.; Yamashita, K.
Arch. Biochem. Biophys. 304, 144-153, 1993
A:Title: N-linked sugar chain structure of recombinant human lymphotoxin produced by CHO
A:Reference number: S34742; MUID:93311995; PMID:8323280
A:Contents: annotation
C:Comment: Secreted from mitogen-activated lymphocytes within 1-2 days after induction,
while having no detrimental effect on normal cells. It can also act synergistically with
C:Comment: This protein and TNF-alpha (tumor necrosis factor) are the products of differ
ical activities but are produced by different cell types and have different induction ki
C:Genetics:
A:Gene: GDB:LTA; LT; TNFB
A:Cross-references: GDB:120442; OMIM:153440
A:Map position: 6p21.3-6p21.3

A:Introns: 33/3; 69/1
A:Note: the first intron occurs before the initiator codon
C:Superfamily: tumor necrosis factor
C:Keywords: cytokine; cytoxin; glycoprotein; homotrimer; lymphokine; macrophage
F:1-34/Domain: signal sequence #status predicted <SIG>
F:35-205/Product: lymphotoxin #status predicted <MAR>
F:41/Binding site: carbohydrate (Thr) (covalent) #status experimental
F:56/Binding site: carbohydrate (Asn) (covalent) #status experimental
Query Match 12.5%; Score 191; DB 1; Length 205;
Best Local Similarity 27.4%; Pred. No. 4.4e-07; Indels 28; Gaps 4;
Matches 57; Conservative 33; Mismatches 90
QY 81 LCLLVNFFMVLVALVGL-GLGMFOLHLOKELARLSTSQMTASSLEKQIGHPSPPPE 139
Db 19 LLLGLLLVLLPGLPGLVGL-----LTPSAAQTARQHPKMLAHS----- 59
QY 140 KKELRKVAHLTKGNSRSMPELEWEDTYGIVLLSGYKKGGLVINETGLYFYVSKYVFRG 199
Db 60 --TLKPAALHIGDPSKQNSLLWRANTDRAFLQDFSLNLSLVFTSGIYFYVSVFSG 117
QY 200 Q-----SCNNPLPLSHKVMRNSKYPQDLVMMBGMOMSYCTTGQWARSYLGAVFNLT 253
Db 118 KAYSPKATSSPLYLAEVQLFSSQYFFHVLPLSSQKQVYFGLQEPWLSMTHGAFQLTQ 177
QY 254 ADHLYNVNSELNVNFEESQTFGLYKL 281
Db 178 GDQLSTHTDGIPLHLVLSPTVFFGAPAL 205
RESULT: 8
QY1344
tumor necrosis factor alpha precursor - horse
N:Alternate names: cachectin; TNF alpha
C:Species: Equus caballus (domestic horse)
C:Date: 10-Sep-1999 #sequence revision 10-Sep-1999 #text_change 04-Feb-2000
C:Accession: J01344
Gene 107, 319-324, 1991
A:Title: cloning and characterization of gene TNF alpha encoding equine tumor necrosis fa
A:Reference number: J01344; MUID:92084125; PMID:1748301
A:Accession: J01344
A:Molecule type: DNA
A:Residues: 1-234 <SDX>
A:Cross-references: GB:M64087; NID:G164244; PIDN:AAA30959.1; PID:G164245
C:Comment: This protein is an important proximal mediator of endotoxemia.
C:Genetics:
A:Gene: TNF-alpha
A:Introns: 62/3; 79/1; 95/1
C:Superfamily: tumor necrosis factor
C:Keywords: cytokine; cytoxin; glycoprotein; lipoprotein; lymphokine; macrophage; memb
F:78-234/Product: tumor necrosis factor alpha #status predicted <TM>
F:19,20/Binding site: myristate (lys) (covalent) #status predicted
F:82/Binding site: carbohydrate (Ser) (covalent) #status predicted
F:146-178/Diulfide bonds: #status predicted
Query Match 12.2%; Score 186.5; DB 1; Length 234;
Best Local Similarity 27.2%; Pred. No. 1.1e-06; Indels 31; Gaps 10;
Matches 62; Conservative 36; Mismatches 99
QY 72 KRRGNHSTGLCLVMPFMVLVALVGLGMFOLFH-----OKELARLSTSQMTA 124
Db 20 KAGQPSRRCLCLSLFSLF--LVAGATTFLCLHPGVIGPQREQLPNAFOSINFL--A 75
QY 125 SLEKQIGHPSPPPEKELKVAHLTKGNSRSMPELEW-EDTYGIVLLSGYKKGGLVI 193
Db 76 QTLKSSRTSDXP-----VAHVANPQEQ--LQWLSGRANALANGVKLTQNLVV 127
QY 184 NETGLYFYVSKYVFRQSC--NNPLSHKVMRNSKYPQDLVMMBGMOMSYCTT----- 235
Db 128 PLDGLYLYSVQLFKGCGCPSTHLLTHTRLSAVSPSKVNLISA-IKSPCHTESPEQA 186
QY 236 -GQWARSYLGAVFNLTADHLYNVNSELNVNFEES-QTFGLYKL 281
Db 187 EAKPWTEPIYLGTVFQLEKGDLSAEINQPNYLDPAESQVYFGIAL 234

a-2.rapb

RESULT 4
US-09-027-287-6
; Sequence 5, Application US/09027287A
; Patent No. US20020064869A1
; GENERAL INFORMATION:
; APPLICANT: Ebner, Reinhard
; APPLICANT: Xu, Guo-Liang
; APPLICANT: Ruben, Steven M.
; APPLICANT: Ullrich, Stephen
; TITLE OF INVENTION: Apoptosis Inducing Molecule II
; FILE REFERENCE: 1488.0650004
; CURRENT APPLICATION NUMBER: US/09/027,287A
; CURRENT FILING DATE: 1998-02-20
; EARLIER APPLICATION NUMBER: US 09/003,886
; EARLIER FILING DATE: 1998-02-20
; EARLIER APPLICATION NUMBER: US 08/822,953
; EARLIER FILING DATE: 1997-03-21
; EARLIER APPLICATION NUMBER: US 60/030,157
; EARLIER FILING DATE: 1996-10-31

EARLIER APPLICATION NUMBER: US 60/013,923
EARLIER FILING DATE: 1996-03-22
NUMBER OF SEQ ID NOS: 55
SOFTWARE: PatentIn Ver. 2.0
SEQ ID NO 6

LENGTH: 281
ORGANISM: Homo sapiens
US-09-027-287-6
Query Match 98.5%; Score 1389.5; DB 9; Length 281;
Best Local Similarity 91.8%; Pred. No. 3.6e-98;
Matches 258; Conservative 0; Mismatches 0; Indels 23; Gaps 1;
QY 1 MQCPNTYVPQIYWDSSASSFWAPPCTVLPCTSVPRRFGORPPPPPPPPPPPPPP 60
DB 1 MQCPNTYVPQIYWDSSASSFWAPPCTVLPCTSVPRRFGORPPPPPPPPPPPPPP 60
QY 61 PPLPPLPPLKKGNGHSTGLCLVMPFVVALVGLGQMFLOKE-----110
DB 61 PPLPPLPPLKKGNGHSTGLCLVMPFVVALVGLGQMFLOKE-----110
QY 111 -----PSPPEKCEKRYAHITKNSNSMPLEWDTGIVLLSGVYKKG 157
DB 121 MTTASSLEKQIGHPSPPEKCEKRYAHITKNSNSMPLEWDTGIVLLSGVYKKG 180
QY 158 LVINETGLVYFYSKYVFFGSCNNLPLSHKYVWNSKYPODLVWMEGOMSYCTTGQWMA 217
DB 181 LVINETGLVYFYSKYVFFGSCNNLPLSHKYVWNSKYPODLVWMEGOMSYCTTGQWMA 240
QY 218 RSYLGAVNLTSDHLYVNSLSLVNPFSSQTFGLYKL 258
DB 241 RSYLGAVNLTSDHLYVNSLSLVNPFSSQTFGLYKL 281

RESULT 5
US-09-252-656B-6
; Sequence 6, Application US/09252656B
; Patent No. US20020081647A1
; GENERAL INFORMATION:
; APPLICANT: Ebner, Reinhard
; APPLICANT: Xu, Guo-Liang
; APPLICANT: Ruben, Steven M.
; APPLICANT: Ullrich, Stephen
; APPLICANT: Zhai, Yifan
; TITLE OF INVENTION: Apoptosis Inducing Molecule II and Methods of Use
; FILE REFERENCE: 1488.0650006
; CURRENT APPLICATION NUMBER: US/09/252,656B
; CURRENT FILING DATE: 1999-02-19
; PRIOR APPLICATION NUMBER: US 60/075,409
; EARLIER FILING DATE: 1998-02-20
; PRIOR APPLICATION NUMBER: US 09/027,287
; PRIOR FILING DATE: 1998-02-20
; PRIOR APPLICATION NUMBER: US 09/003,886
; PRIOR FILING DATE: 1998-01-07
; PRIOR APPLICATION NUMBER: US 08/822,953
; PRIOR FILING DATE: 1997-03-21
; PRIOR APPLICATION NUMBER: US 60/013,923
; PRIOR FILING DATE: 1996-03-22
; PRIOR APPLICATION NUMBER: US 60/030,157
; PRIOR FILING DATE: 1996-10-31
; NUMBER OF SEQ ID NOS: 61
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 6
; LENGTH: 281
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-252-656B-6

Query Match 98.5%; Score 1389.5; DB 9; Length 281;
Best Local Similarity 91.8%; Pred. No. 3.6e-98;
Matches 258; Conservative 0; Mismatches 0; Indels 23; Gaps 1;